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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

HA, NATHAN W

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 05/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Application No.

09/436,158

Applicant(s)

PEREZ ET AL.

Office Action Summary

Examiner

Nathan W. Ha

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-28 and 30-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-28 and 30-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f):
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

Attachments

1. ☐ Notice of References Cited (PTO-892)
 2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-945)
 3. ☐ Information Disclosure Statement(s) (PTO-1449, Paper No. s)
 4. ☐ Interview Summary (PTO-412, Paper No. s)
 5. ☐ Notice of Informal Patent Application (PTO-152)
 6. ☐ Other _____

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DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 13-14, 17-18, 20-33, and 34-45 are rejected under 35 U.S.C. 102(a) as being anticipated by Okumura et al. (US. 6,130,115, previously cited.).

In regard to claims 13, 21, 22, 23, figs 7a-c, Okumura et al. discloses a semiconductor package comprising:

a metal lead frame, fig. 7c for example, including a plurality of leads 13 and 16 arrayed around a central region thereof; each lead having an outer end portion extending away from the central region and an inner end portion extending toward the central region, and a middle portion extending between the outer end and inner end portions, the middle portion being of a lead width and having a lower surface which defines a land, see fig. 7a;

a locking pad 16 in an outer portion of each lead adjacent to outer end, see details in fig. 7b;

a wire bonding pad, also portion of member 16, in the outer end portion of each lead and having a bonding pad width which exceeds the lead width; see also fig. 7b;

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a die pad 11 attached to the lead frame in the central region thereof and adjacent to the inner ends of the leads, the die pad 11 having an upper surface and a lower surface as shown in fig 7a, the lower surface having a central portion and a recessed shoulder extending around the central portion.

In regard to claim 14, the die pad is attached to the frame or to at least one of the leads by at least one tie-bar 10, see fig. 7c, see also, col. 6, second paragraph.

In regard to claim 17, the lands 16 are rectangular, see fig. 7b.

In regard to claims 18, 24, in fig 7, Okumura further discloses a semiconductor die 12 attached to the upper surface of the die pad 11;

a plurality of conductive wires 14 bonded at opposite ends to pad on a top surface of the die and selected ones of the bonding pads on the leads; and,

a body insulative plastic molded over the die 12, die pad 11, and the leads 13 such that the plastic body surrounds the locking pads, the bonding pads, and the recessed shoulder on the lower surface of the die pad and interlocks with them, see fig. 7b, also, col. 16 second paragraph.

In regards to claim 20, see col. 16, second paragraph.

In regards to claim 25, see fig. 7b.

In regards to claims 26 and 33, Okumura et al. further discloses a recessed shoulder at the lower surface of the die pad 11 such that a central portion of the lower surface inside the shoulder is exposed through a lower surface of the plastic body, see figs. 7a and 7b.

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In regards to claims 28 and 32, Okumura et al. further teaches a way for resisting penetration of moisture into the package, see col. 8, last paragraph.

In regards to claims 31-32, see figs. 7.

In regard to claim 35, Okumura discloses the insulative plastic body underfills the pads; see col. 6, lines 7-10.

In regard to claims 38-41, 43 see Okumura's figs. 9.

In regard to claims 42, 45, see fig. 9.

Regarding the processing limitation recited in (claims 34, 36, and 44, metal-displacement process, etc.), this would not carry patentable weight in this claim drawn to structure. In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 15-16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura et al. as applied to claim 13 above, and further in view of Yagi et al. (US. 6,025,640)

In regard to claim 19, Okumura et al. discloses all of the claimed limitation as

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containing nickel. Yagi et al., however, teaches the leadframe 31 having an alloy of copper, or iron alloy containing nickel, see col. 10, lines 8-25.

Therefore, it would have obvious to one of ordinary skill in the art at the time of the invention was made to use such materials as shown above by Yagi et al. in Okumura et al. since these metals have higher conductivity

In regard to claims 15-16, the width and the pitch of the leads and the pad as claimed are not patentable features since one of ordinary skill in the art would modify these measurements in the device to meet the design criteria.

Response to Arguments

5. Applicant's arguments filed 8/22/01 have been fully considered but they are not persuasive.

Applicants generally submit that Okumura discloses various embodiments of the lead frame device. It should be noted that a lead frame should include its leads surrounding the central portion where the IC chip disposed. However, regarding to this newly rejection, the Office cited figs. 7 which uniformly teaches the structure of a single embodiment of a lead frame. The embodiment of figs. 9 is identical to embodiment of figs. 7, only the solder balls being added to connect the IC to the external devices.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Ha whose telephone number is (703) 305-3507. The examiner can normally be reached on M-F 9:00-5:00(EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and 308-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Nathan Ha
May 8, 2002

